THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 38, No. 2 | 540 N. Michigan Ave., Chicago, Ill. | October, 1938

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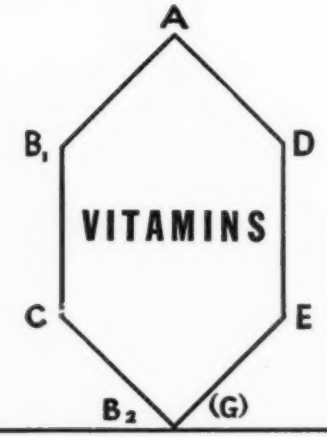

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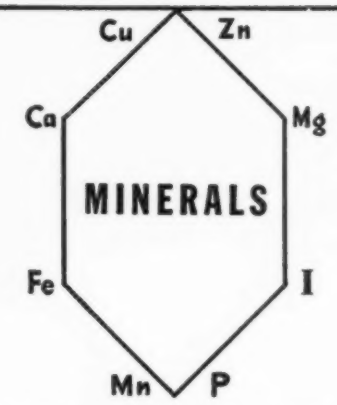

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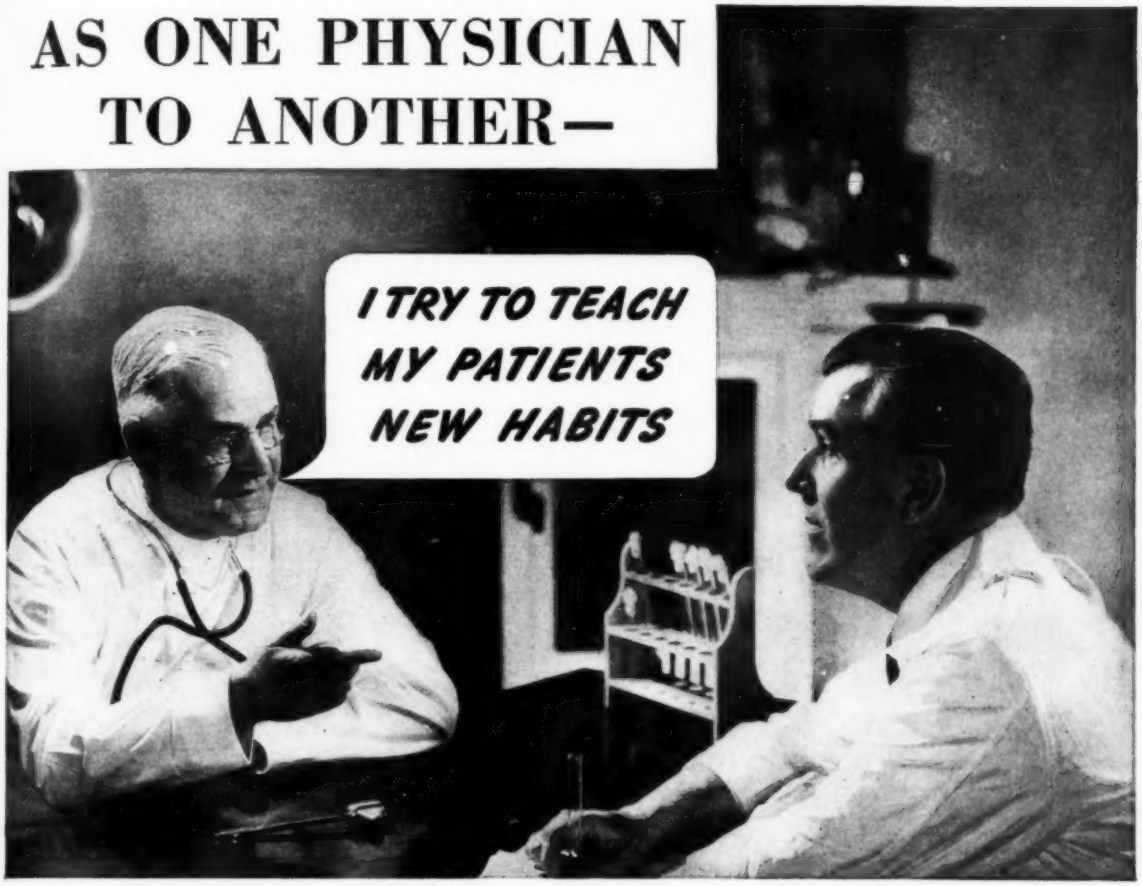

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RECENT ADVANCES IN THE SCIENCE OF NUTRITION

II. Newer Knowledge of the P-P Factor and the Control of Endemic Pellagra

● The years since 1932, when the P-P factor was known variously as vitamin B_2 or G, have been especially marked by contributions to our knowledge of the anti-pellagric vitamin. Considerable progress has also been made in the treatment of human pellagra as well as in the control of the disease. It might be of interest to review briefly a few of the outstanding developments in this field.

The P-P factor is now accepted as being closely related chemically to nicotinic acid if, indeed, it is not identical with that compound (1). Nicotinic acid has been used successfully in the treatment of human pellagra (2) and there is evidence to support the belief that the P-P factor is intimately associated with essential enzyme reactions in the body (3). A laboratory test has been devised for the early clinical detection of pellagra (4) and there is today better agreement as to the basic dietary requirements for the management of florid pellagra (1).

While the situation as regards endemic pellagra has, in general, shown improvement during recent years, an occasional report indicates that endemic pellagra still constitutes a major medical problem in some localities (5). Authorities agree that the old adage relating to an ounce of prevention being the equal of a pound of cure applies particularly well in the case of pellagra. Consequently, in specific regions of this country certain control measures have been advocated in an endeavor to bring this deficiency disease under permanent control. The most promising of these measures are the issuance of yeast rations and popular education to the desirability of home production of foods rich in the P-P factor, especially during late winter and early spring. The problem of permanent control of pellagra has been clearly and briefly defined as follows:

> "The prevention of endemic pellagra is simple in theory but difficult in practice. If every normal person received enough of the foods containing the pellagra-preventive vitamin there would be no endemic pellagra.—Permanent control can be obtained only by bringing about permanent changes in dietary habits" (1).

The correction of those long-standing dietary malpractices which are responsible for pellagra is certain to be brought about only slowly. The concerted and sustained efforts of all agencies concerned with public health will be required, not only to insure observance of the control measures described above, but also to educate the potential pellagrin to the necessity of a varied diet of protective foods.

Commercially, canned foods may play an important part in the current program designed to bring pellagra under control. Several hundred varieties of canned foods are readily available on every American market at all seasons of the year. Judicious inclusion in the diet of those foods known to be important carriers of the anti-pellagric factor (1) should materially assist in effecting permanent control of endemic pellagra in America.

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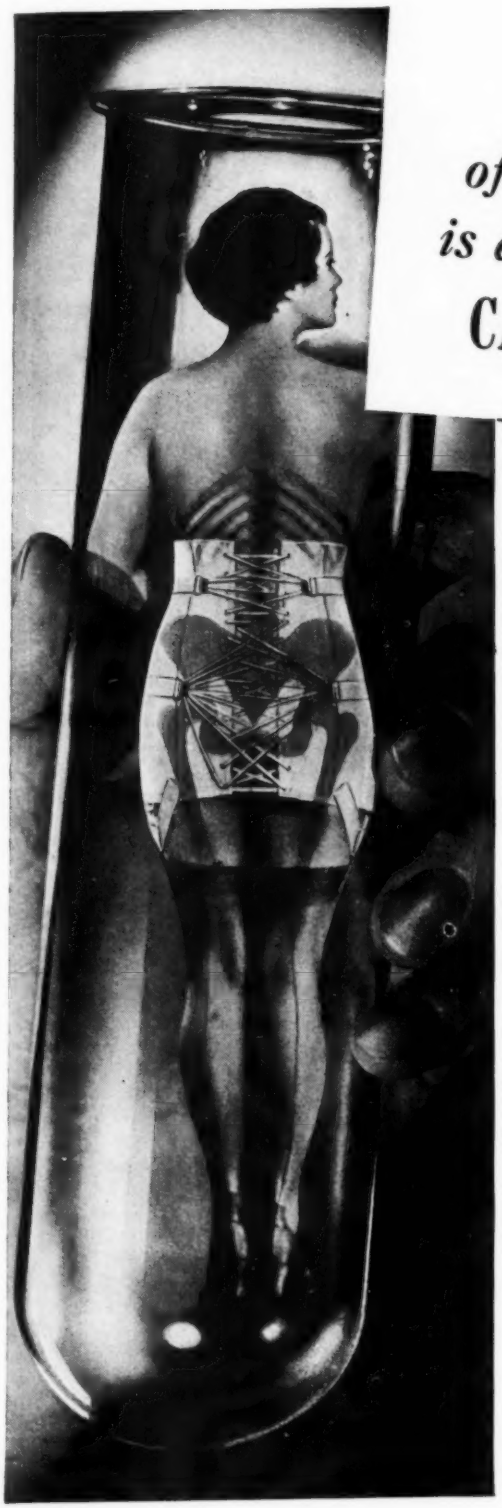
(1). 1938. J.A.M.A. 110, 1665.
(2). 1938. J.A.M.A. 111, 584.
1938. Ibid. 111, 613.
1938. Ibid. 110, 289.
(3). 1938. J.A.M.A. 111, 28.
(4). 1938. J. Med. Assn. State of Alabama. 8, 52.
(5). 1938. J. Med. Assn. State of Alabama. 7, 475.

This is the forty-first in a series of monthly articles, which summarize, for your convenience, the conclusions about canned foods reached by authorities in nutritional research. We want to make this series valuable to you, so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles.



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RESEARCH PROBLEM NO. 8

To Determine the Comparative Effects of Aspirin and Alka-Seltzer on Heart Function

Experimental Method. Normal, apparently healthy, adults both male and female were used as test subjects. Heart function was studied from electrocardiograms made with a General Electric Victor Cardiograph, using the usual technic.

At 8:30 in the morning of each experimental day the subject reported at the laboratory after a fast from food and drink for at least 13 hours. The subject rested on a cot for one hour, at the end of which time he or she received a dose of 2 or 4 tablets of either aspirin with 250 cc. of water or of a similar number of Alka-Seltzer tablets previously dissolved in a like volume of water.

Electrocardiograms were made at intervals both before and after ingestion. These were then submitted to a cardiologist for his interpretation.

Results. From a study of electrocardiograms made both before and after the ingestion of aspirin and Alka-Seltzer, it would appear that no changes are apparent other than the normal variation. Therefore, as determined by electrocardiography, neither Alka-Seltzer nor aspirin in the doses given in this study has any significant influence on the function of the heart. ●

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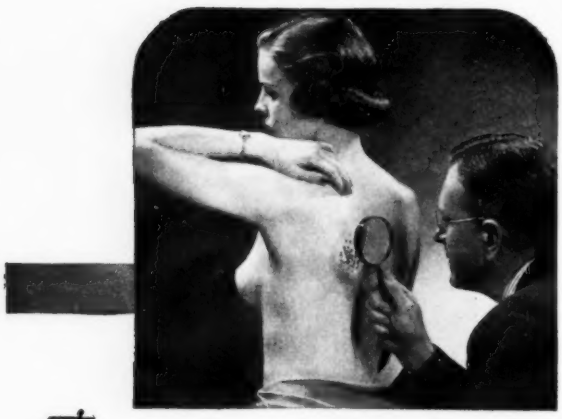

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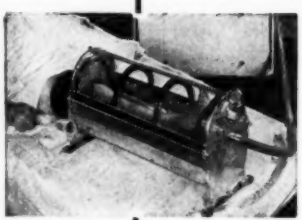

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1. Council on Foods, Jour. Amer. Med. Asso. 108, 1259 (1937)
2. Iron retention in infancy. Sterns & Stinger. Jour. of Nutr. 13, 127 (1937)
3. The Influence of a Daily Serving of Spinach or its Equivalent in Oxalic Acid Upon the Mineral Utilization of Children, Jour. of Ped. 12,188 (1938)
4. Chemical Analysis of Gerber's Strained Foods.
5. The loss of minerals and other constituents from vegetables by various methods of cooking. Peterson & Hoppert, Jour. Home Economics, 17,265 (1925). A resume of Literature on the Nutritive Value of Canned Foods, Research Dept., Continental Can Company.

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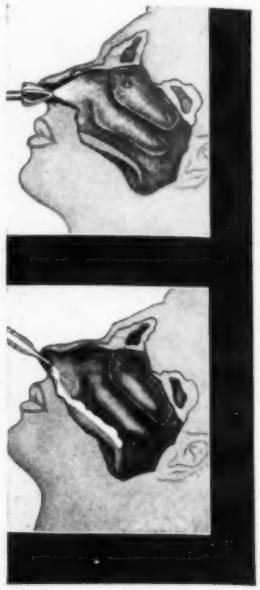

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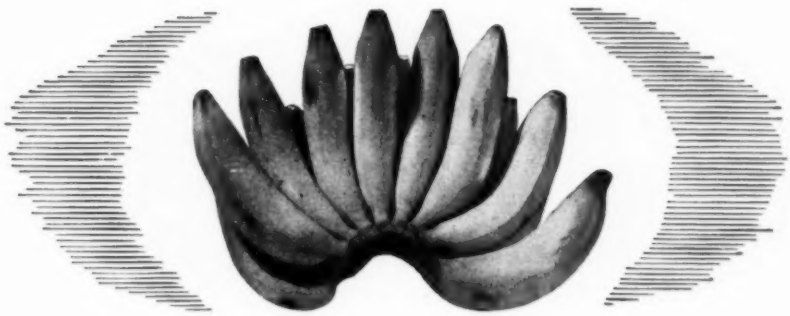

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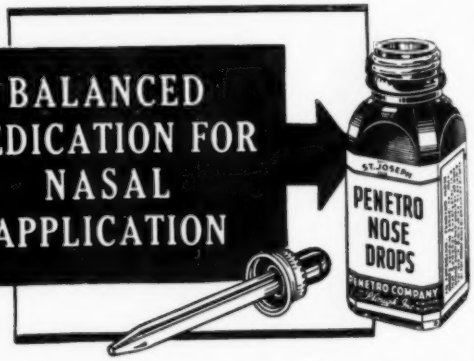

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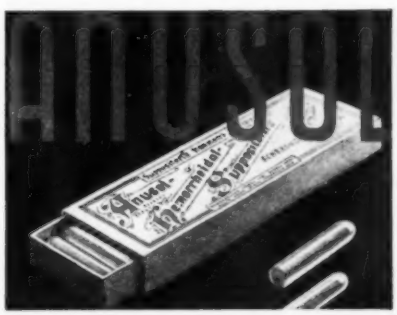

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The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

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Thoracic Technic*

H. H. FRYETTE, D.O.
San Mateo, Calif.

Ormond A. Beadle, in his monograph on "The Intervertebral Discs,"[1] says of the spine:

> The spine is a skeletal organ unique in function and therefore in structure: mistakes have not seldom arisen from an inaccurate comparison with other parts of the skeleton. The spine is, perhaps more than any other part, exposed to the daily wear and tear of functional activity, and owing to the peculiar conditions, this functional trauma, never in abeyance, can continue to work the most far-reaching damage to its structure . . .

General Considerations.—The spine, in itself, is not a weight-bearing column. If the muscles relax as in a faint or under anesthesia, the spine immediately collapses. Therefore, in considering spinal technic, it is as necessary to consider the spinal muscles and ligaments as it is the vertebrae, for the muscles and ligaments maintain the position of the spine.

The typical or normal spine of today is far from the ideal spine. There seems to be a great difference of opinion as to what an ideal spine really is. Many of our orthopedists advocate a flat lumbar, which necessitates a flat dorsal, which results in a spine without its anteroposterior curves. I do not agree with that idea. This is a subject that should be discussed under "Posture" and cannot be gone into in detail here; but if we are to discuss spinal treatment, we must have an ideal spine in mind toward which to adjust.

In osteopathic practice there seem to be two general types of procedure: First, the most usual type is to mobilize the immobile joints in the hope that thereafter nature will maintain as nearly normal conditions as possible. The thought seems to be that while the spine may not be ideal, it has adapted itself to the individual's requirements by various compensations and that these compensations should not be disturbed. This is undoubtedly true in some extreme pathological conditions such as malignancies, tuberculosis, caries, old fractures and the like; but as I shall point out later, the further we go, the more we realize that many of the cases we have thought hopeless can be helped.

The body lives only by a constant process of adjustment and readjustment to its internal and external environment. When it cannot make a perfect adjustment, it attempts to compensate for it; but *compensation is never perfect.* If it were, we should live forever. Compensations, no matter how nearly perfect, are weak spots in the organism and these are the parts which ultimately break down and become the seat of disease. For instance, regions of compensation in the spine may be the object of anterior poliomyelitis attacks. They are also the cause of a great deal of wasted energy.

There is a magnificent oneness in the body. As I have heard Dr. Arthur D. Becker say: "One part of the body doesn't go and get sick by itself. If one part is sick, it affects every other part."

It has been the thought of many for years that if a vertebral joint lesion is, as we might say, dormant—not producing any visible trouble at the time—it should be let alone. But thirty-five years of observation has taught me that this is not true. There is no such thing as a completely compensated or dormant lesion. It is a weak spot, always growing weaker, and some day real pathology will result from it.

I would suggest, therefore, that when a patient comes to us, we take a long-distance view of his case and undertake to normalize his whole body, not just patch him up locally where the trouble may be the most obvious. If all those treating human ills were paid to keep their patients well instead of merely helping them when they are sick, it might be much easier to sell this idea.

"Specific treatment" and "find it, fix and let it alone," are terms that have been greatly misunderstood.

A vertebral joint lesion is said to be a mechanical or physiological deviation from the normal, which interferes with function. Lesions are much more vicious in some persons and under some conditions than in others. The remote effect of a lesion is not necessarily in proportion to its mechanical variation from normal. Thus, a healthy person with naturally loose ligaments may support a lesion with comparative immunity; whereas, a person with short rigid ligaments who is toxic may suffer greatly from a slight lesion.

Lesions are usually classified as "acute" or "chronic." I do not wish to change the terminology, but I prefer to think of lesions as "recent" and "old."

* Delivered before the Technic Section at the Forty-Second Annual Convention of the American Osteopathic Association, Cincinnati, July 11, 1938.

In medicine, generally speaking, "acute" means sharp, active and of short duration; whereas, "chronic" means dull, inactive and of long duration. But chronic lesions may be acute in the sense that they are sharp and active. The real difference between a recent lesion and an old lesion is the difference in the pathology surrounding them.

The local pathology of a recent lesion is expressed in ligamentous tension, muscular tension, with some degree of infiltration, diminished joint mobility, and tenderness or pain.

The local pathology commonly expressed in an old lesion is some degree of tenderness, infiltration, fibrosis and muscular degeneration, general ligamentous thickening posteriorly and anteriorly, and intervertebral disc changes, accompanied by limitation of joint mobility.

Time is a factor in the production of these changes in all cases, but the tissues of some patients are more prone to fibrous degeneration than others, therefore their lesions become "old" more quickly. This is especially true if the patient is toxic from any cause, but streptococcic toxemia is probably the worst.

Recent lesions affect particularly the cerebrospinal nerves and the muscles because of mechanical irritation. As the lesion becomes old, the somatic symptoms subside, and because of nutritional changes, the sympathetics become involved and the viscera are affected.

Production of Lesions.—It has been said that vertebrae become locked within their limits of physiological motion. I do not believe this statement to be generally true.

I believe that most vertebral joint lesions can be classified as traumatic or reflex. In most traumatic lesions (which include postural lesions), the vertebra has moved slightly past its physiological range of motion. This puts an abnormal tension on the capsular ligaments. The intrajoint pressure is increased sufficiently to irritate the synovial membrane and the intrajoint nerve terminals. At this point Hilton's law comes into evidence: "The nerves that supply the joint supply the muscles that move the joint." When the intrajoint terminals become irritated, the muscles that move the joint go into reflex contraction. This increases the intrajoint tension and a vicious cycle is set up. If, in an acute lesion, the intrajoint pressure can be relieved by adjusting the vertebra *without further irritating the intrajoint terminals,* the muscles which move the joint immediately begin to relax.

In reflex lesions the vertebra may or may not be immobilized within its physiological range of motion. These lesions are dominated by Head's law: "A stimulus applied at a point of low sensibility will show itself at a point of high sensibility, and vice versa." A low grade visceral irritation maintained for a long time often produces sufficient reflex contraction in the spinal muscles to cause spinal lesions without subluxating the vertebra beyond its physiological range of motion. There may be, and indeed often is, more pathology surrounding an old reflex lesion than surrounding an old traumatic lesion, although the mechanical distortion is not so great. However, in some instances reflex irritation may be great enough to produce sufficient muscular spasm to move a vertebra past its physiological range of motion and lock it there. For example I have seen this happen in allergic attacks of asthma and in reflexes caused from irritating visceral adhesions by exercise.

Physiological Movements.—In order to understand the production and correction of lesions of the spine, it is necessary to understand its normal or physiological movements. I am constantly amazed at the reluctance of the profession to learn and use these laws. If they were difficult to learn or apply, it might be to some degree excusable; but they are so simple that a child of ten years of age could learn them in five minutes if he wished to. Their proper use makes just the difference between an indefinite hodgepodge of pulling and hauling the spine around with the hope of adjusting the right vertebra and a definite scientific procedure. If one understands the sequence of movements through which a vertebra has traveled step by step when the subluxation was produced, it is very simple to reverse this sequence in correction.

According to Lovett[2] (and I have found this to be true in practice), there are two principal anatomical components which mechanically control the spinal movements: the posterior part of the spine—the facets, and the anterior part—the bodies. When the facets are locked, either in extension or flexion, the posterior part of the spine is in control and it behaves like a flexible ruler or an old-fashioned corset stay; it must be rotated before it can be sidebent. When the facets are in neutral position, the bodies are in control and they behave like a pile of blocks, that is, when the spine is sidebent they crawl out from under the load. I have condensed this into the following two laws:

1. When the thoracic spine is in extension and is rotated and sidebent, the bodies rotate (are forced) to the concavity, in the sequence of extension, rotation, sidebending.

2. When the thoracic spine is in neutral (easy flexion) and is sidebent, the bodies crawl out from under the load and rotate to the convexity, in the sequence of flexion, sidebending, rotation.

These laws are as simple as they are definite.

There are six classical positions in which thoracic spinal joint lesions are commonly found:

1. Extension, rotation, sidebending.
2. Flexion, sidebending, rotation.
3. Simple or uncomplicated extension.
4. Simple or uncomplicated flexion.
5. Simple or uncomplicated impaction.
6. Lesions in a state of fibrous or bony ankylosis.

Under a seventh heading one should classify atypical lesions which are produced by a direct blow to the spine. In these the bones may be jammed into almost any position, but they are comparatively rare.

After determining the type of lesion, one should determine the point or points of least mobility so that the greatest force can be directed there in correction. Unfortunately the point of least mobility or so-called "locking" is not constant in each type of lesion.

Individual Extension, Rotation, Sidebending Lesions.—In an extension, rotation, sidebending lesion of any thoracic vertebra, except the twelfth which is really a lumbar, the articulating facet on the side of the concavity has traveled downward and

slightly inward; the facet on the convexity has traveled upward and outward, and the body has tended to the concavity. The position of the spine and the angle of the force which produced the lesion determine the point of greatest strain and therefore the point of greatest damage and locking. This is usually at the facet on the side of the concavity, but if the force of rotation was greater than the force of sidebending the facet on the side of the convexity may be carried upward and forward enough to immobilize it in that position. Either one or both facets may be locked in this position. At the same time this occurred in the facets, the intervertebral disc may have been injured, and if the lesion becomes chronic its mobility may become diminished. It is also possible for the intervertebral disc to become injured and immobile without the facets becoming locked. Therefore, one may find a vertebral lesion with varying degrees of mobility at any of the one, two, or three points of articulation. As has been said, the condition must be accurately diagnosed so that one may know just how to proceed in correction.

Flexion, Sidebending, Rotation Lesions.—Individual flexion, sidebending, rotation lesions do not occur in the thoracic as frequently as individual extension, rotation, sidebending lesions. When they do occur, I am of the opinion that they are, as a rule, compensations for extension, rotation, sidebending lesions. The articulating facets are in some degree of flexion. The articulation between the facets on the concavity is less mobile than that between the facets on the side of the convexity. The load is shifted to the intervertebral disc and the body of the vertebra is rotated to the convexity. The greatest immobility is found at the intervertebral disc. This is especially true below the sixth thoracic.

Simple Extension Lesions.—A simple extension lesion of a thoracic vertebra is one immobilized in the position of extension without any rotation or sidebending. Motion is equally limited in both facet articulations, but normal or increased in the intervertebral disc. Therefore, extension may be increased but flexion is limited. (This lesion is often erroneously called an anterior; probably because the spinous process lies abnormally close to the one below it.)

Simple Flexion Lesions.—A simple flexion lesion of a thoracic vertebra is one that is found in the position of flexion with no rotation or sidebending. The load is shifted to the intervertebral disc and the facets are in the position of flexion. Flexion may be increased but extension is limited. The greatest immobility is in the intervertebral disc. (This lesion is often erroneously called a posterior vertebra; probably because the spinous process protrudes.)

Simple Impaction Lesions.—A simple impaction lesion of a thoracic vertebra is one in which the vertebra is in extension posteriorly and flexion anteriorly. In other words, the facets are immobilized in the position of extension and the intervertebral disc is compressed. There is so little mobility in this lesion that it is very nearly an ankylosis.

Atypical Lesions.—Atypical lesions result from direct force to the spine, or they may occur as the result of an unsuccessful attempt to correct a typical lesion. Atypical lesions are, as a rule, naturally much more difficult to correct than typical ones

Extra-Articular Fibrous Ankylosis.—We may find vertebrae, in any position, in a state of fibrous ankylosis. The character and amount of fibrous thickening may vary greatly in different cases. Fibrosis is the result of irritation, but some persons are much more prone to fibrous degeneration than others, just as some develop much larger scars than others.

If the fibrosis is localized around the lesion only, it is probably the result of localized mechanical or reflex irritation; but if the patient's muscles and ligaments in general are fibrotic and thickened, the patient has been or is suffering from general toxemia.

The "feel" on palpation of an active fibrositis is quite different from the "feel" of a fibrosis that occurred some time in the past. An active fibrositis feels more swollen and is more elastic than a dormant fibrosis. An old dormant fibrosis is more rigid and the fibers feel more like fiddlestrings.

As fibrosis increases in character and amount, it diminishes muscular activity. If this process continues sufficiently, joint mobility is entirely overcome, the synovial fluid is diminished and the result is a fibrous ankylosis.

Extra-Articular Bony Ankylosis.—Extra-articular bony ankylosis of the spinal joints occurs as the result of many pathemata. Because of the difference in the character of the bone of the diarthrodial joints of the posterior articulating facets and that of the amphiarthrodial joints of the bodies of the vertebrae, the bodies are much more prone to pathology and to ankylosis than the articulating facets. When these amphiarthroses are suffering from mechanical or chemical irritation, or both, osteophytes may be laid down in the longitudinal ligaments. These spurs are outgrowths from the epiphyseal plates and may progress until the whole ligament becomes ossified and the joint completely splinted.

These spurs are often seen in x-rays and it is not uncommon to see a complete splinting.

I am of the opinion that there are many cases in which these spurs have grown to considerable length but still there has not developed enough osteoarthritis—or perhaps better, sufficient osteochondritis—to damage the joint beyond the possibility of some degree of repair, if proper treatment is applied.

When osteochondritis has progressed to the point of destruction of the cartilage and a fusion of the bodies, the case is hopeless.

The difficulty is in diagnosing the borderline case, that is, in diagnosing the condition accurately enough to determine exactly what type of treatment is indicated.

THE FRONT OF THE SPINE

The various characteristics of the posterior part of the spine are so obvious and the characteristics of the anterior part so remote, that we are prone to overemphasize the one and neglect the other.

The vertebral bodies, the intervertebral foramina, the anterior and posterior longitudinal ligaments, the sympathetic chain, the vertebral arteries, veins, and lymphatics, the rami communicantes, the intervertebral discs and the spinal cord itself, should be kept in mind.

The gross anatomy and pathology of the vertebral bodies is generally well understood, but Beadle[1] emphasizes the fact that the epiphyseal ring or edge of the body, which is one of the attachments of the longitudinal ligaments, often becomes fractured from apparently slight strains. These injuries are not ap-

parent in the x-ray nor upon direct examination until after the soft tissues have been macerated and cleaned off.

We often see cases with sharp localized pain in front of the spine that require weeks to recover. I had attributed this pain to intervertebral disc injuries but I may have been wrong, at least part of the time. At any rate, they should be treated as fractures.

The intervertebral foramina should be kept constantly in mind and all treatment directed with the idea of keeping them to their maximum size.

Treatment that will overcome the rigidity and thickening of the anterior longitudinal ligament will take care of the posterior longitudinal ligament at the same time. The anterior longitudinal ligament often becomes so thickened over an irritated area of the spine that it is plainly visible in a lateral x-ray of the spine. Limitation of anteroposterior motion in the joint is often in proportion to the degree of thickening and rigidity of this ligament.

Any irritation sufficient to thicken these ligaments must also thicken the surrounding connective tissue and limit mobility sufficiently to interfere with the sympathetic chain, the vertebral arteries and veins and the lymph drainage of the spinal cord.

In speaking of the intervetebral disc, Beadle says, ". . . the broad surface of the vertebral body [and therefore the intervertebral disc] bears the greater part of the burden of the spine and upon it fall the various stresses and strains of functional activity as well as the many grades of finer and coarser physical shocks leading to mechanical injury."[3]

The turgor and elasticity of the disc is greatest in the young. It has no blood vessels of its own after about the twentieth year but receives its nourishment by diffusion from the spongiosa of the vertebral body. "No wonder then," says Beadle, "that the intervertebral discs show perhaps a stronger inclination to various forms of degeneration in advancing age than any other tissue of the body."[4]

It is very apparent how necessary mobility of the spine is to the health of the disc; for it is only by the pumping effect of motion that its nourishment is maintained.

The normal nucleus pulposus possesses considerable turgor which, when compressed, exerts itself to replace the vertebra to normal.

THE SPINAL CORD

Just after the cervical vertebral arteries have pierced the dura mater and before they unite to form the basilar artery, they give off the anterior and posterior spinal arteries. These arteries, in their respective positions, travel down the whole length of the cord. At the end of the cord the posterior spinal artery unites with the anterior spinal artery and it continues to the end of the filum terminale. Through the cervical region the vertebral arteries send anastomosing branches to the anterior and posterior spinal arteries. Through the thoracic region the vertebral and intercostal arteries augment the spinal arteries, and in the lumbar, the lumbar arteries send branches to the anterior spinal artery. These augmenting radicles supply the greater part of the blood to the cord.

A glance at this arrangement impresses one with two facts: First, nature has attempted to make each segment of the cord as independent as possible; second, a local lesion interferes not only with local nutrition, but any lesion from the sixth cervical up, which interferes with the vertebral artery, may interfere with the nutrition of the whole cord; and any lesion from the first cervical down, which interferes with the augmenting radicles, interferes with the nutrition of the cord below the level of that lesion.

The general arrangement of the venous drainage is very much the same as that of the arterial supply, except that it lends itself to congestion in the upright posture.

For many years I have felt that the spinal medulla does not suffer so much from anemia as from congestion.

Although authorities are not agreed on the function of the cerebrospinal fluid, it must be important. Anything that modifies the circulation of the blood to the cord must have some effect on the cerebrospinal fluid.

After all is said and done, any of these factors which create or modify vertebral lesions are of little significance except as they influence the nutrition of the spinal cord, the cerebrospinal fluid and the free flow of nervous impulses through the afferent and efferent spinal nerves.

RIBS

Consideration of the ribs is an important part of thoracic technic. They are not only important in themselves but also they greatly influence vertebral lesions. Anatomically, the first, ninth, tenth, eleventh and twelfth differ from the others in that they each articulate with but one vertebra.

The first rib seldom has a synovial membrane between its distal end and the sternum, while the typical ribs all have diarthroses at their sternal ends, and the fifth to the ninth articulate with each other at their distal ends by means of arthrodial diarthroses.

The eleventh and twelfth, and sometimes the tenth, are peculiar in that they each articulate with but one vertebra and do not have an articulation with the transverse process.

Considered functionally, the ribs have two movements, a perpendicular or up-and-down movement, and a rotatory movement. The up-and-down movement is primarily associated with extension and flexion of the thoracic spine. When the spine is extended the sternum is elevated and the ribs are separated; when the spine is flexed the sternum is lowered and the ribs are approximated.

In respiration the chief movement is one of rotation, through the long axis of the rib, or, as it has been called, a "bucket bail" movement.

In inspiration, this movement increases the transverse diameter of the thorax. In expiration it diminishes it.

Both types of rib movement necessitate free mobility at the costotransverse articulation, and it is at this articulation that most of our rib lesions occur.

The Nomenclature Committee of the Associated Colleges of Osteopathy[5] has suggested the terms *depression* lesions and *elevation* lesions for the ribs, but as ribs are usually limited in their mobility in the respiratory position of inspiration or expiration, instead of in the position of forward or backward bending, it seems to me that to term them *inspiration* lesions and *expiration* lesions is more accurately descriptive.

Rib lesions may be classified as primary and secondary.

A primary lesion occurs when the normal relations of the costovertebral and costotransverse articulations are disturbed primarily.

A secondary lesion occurs when the rib has been thrown out of normal relation with its neighbors by a vertebral lesion.

It is a common error to attempt to adjust ribs to each other instead of normalizing their articulations.

If a rib is found to be out of normal relation with its neighbors, one should immediately examine the vertebra or vertebrae to which it attaches to determine if there is a vertebral lesion. When a thoracic vertebra is in lesion, it is sure to change the normal relationship of its rib or ribs.

If a rib is immobilized in the position of expiration (the most common position), it approximates the rib below. The upper edge is turned out, with the lower edge turned in.

If a rib is immobilized in the position of inspiration, the position is just the reverse.

The intercostal muscles are a potent factor in maintaining rib lesions.

The thoracic vertebrae and their corresponding ribs are so closely associated that they should not be considered separately but together as spinal segments.

EXAMINATION

In examining the spine I would suggest the following procedure:

Inspection.—Have back exposed, patient standing. (It is preferable to have the patient standing instead of sitting because the patient's legs may be of unequal length and the effect is more obvious when he is standing.)

Note conformation of entire back, anterior or posterior inclination of pelvis, lateral tilt or rotation of pelvis, or both, general relative positions of innominates, anteroposterior curves of spine. Inspect for lateral lumbar curve and thoracic compensation. Note position of shoulders and tilt of occiput. Observe development of muscles, groups atrophied or hypertrophied.

Have patient bend forward and note carefully the action of each vertebra. Note the same in backward bending. Patient erect, have him bend right and left and look for groups of vertebrae that move in block; compare movements of these groups in bending right and left.

More than three vertebrae are seldom involved in an extension, rotation, sidebending group lesion.

In lateral curvature or scoliosis the vertebrae are in the position of flexion, sidebending, rotation.

In group lesions involving enough vertebrae to produce a curvature, the position of the spinous processes cannot be taken as a guide. I have seen a plumb line dropped down a patient's back having a well defined curve, and because the spinous processes were in line the patient was passed as not having a curvature.

It should be remembered that (in a curvature to the right, for example) while the bodies of the vertebrae are rotating to the right and crawling out from under the load, the spinous processes are rotating to the left. This keeps the spinous processes in line until the curvature has become so great that the spinous processes can no longer reach the center line. The actual curvature is much greater, therefore, than the spinous processes indicate.

Determine the amount of sidebending and rotation by the position of the transverse processes and ribs.

If normal dorsal thoracic curve is diminished, the normal ventral lumbar curve will be diminished, and vice versa.

Palpation.—Place patient on table on side. (Preferably on air cushion. An air cushion really floats the spine; whereas, if a patient lies on a hard table on shoulder and hip the spine is more or less suspended between these two points. It sags in the middle and makes it harder to determine the true mobility of the spine and the condition of the muscles.) Place thighs in position to give lumbar greatest mobility. Elevate head so that cervical area is horizontal to thoracic spine.

Before attempting to locate spinal lesions, palpate the deep spinal muscles to determine their condition; i.e., their tonic, atonic, or hypertonic condition, also infiltration and fibrosis. Muscles are modified most commonly by nervous, mechanical, chemical, thermal or mental stimuli. It is worth the effort to attempt to differentiate these and many more conditions by the difference of their "feel."

Palpate each individual vertebra to determine its relative position, degree of mobility, or immobility, its point or points of greatest fixation, its associated ribs, and the condition of the surrounding tissues.

TREATMENT

I know of no circumstance in which one feels so inadequate and inefficient, as when called upon to administer to the human body. Our total *relative* knowledge so approaches zero that one can have no faith in one's self at all. We can have faith only in the ability of the body to heal itself and hope that we may be of some assistance. .

This cannot be accomplished by "clubbing" the body into submission, by inhibiting symptoms, or creating new reactions, but by *cooperation*—the more nearly perfect the better. We can cooperate only to the degree that we understand.

We have observed many vital reactions, but we do not understand them. We know something of the mechanics of the body.

We have observed that structure determines function and that structure is modified by its environment; therefore if we can assist nature in normalizing structure and its environment we assist function.

To me, there is nothing wonderful about the principles underlying osteopathy; they are so absolutely simple and obvious. But what I thrill at is the dogged determination of the body to live normally. I am constantly amazed at the ability and determination of the body to return to normal when the causes of the trouble have been removed. Therefore I see fewer and fewer "hopeless" cases.

It is absolutely impossible to describe osteopathic treatment accurately. That is why osteopathy has not advanced even faster than it has. There is no set formula for a "treatment" as there is in drug therapy. There are no two cases exactly alike. There are no two people with like temperaments, whose nervous systems respond similarly and who are in exactly the same pathological condition; furthermore, the same patient is in a slightly different state mentally, chem-

ically and mechanically every time one sees him. It is necessary, therefore, to diagnose the patient, as well as the disease, each time one sees him, and treat what one finds.

There has been a tendency in the profession to develop two schools of treatment. Those who are able to make adjustments have been inclined to make a few so-called specific adjustments and call it a treatment. Those who are not able to make satisfactory adjustments have been inclined to give a general "loosening up" and call that a treatment. Both have been rewarded with good results and both seem satisfied.

Dr. Still often said, "Find it, fix it, and let it alone." As I said before, I think that saying has been misunderstood by many.

The term "specific" as opposed to "general" also has been misunderstood. The term "specific" means definite, as a definite treatment for a particular condition; while "general" means indefinite or not precise.

We all want to find it, fix it, and let it alone. We all want to be specific or definite or precise, as opposed to general or indefinite.

Suppose we have a patient with a bad heart, and we have an extension, rotation, sidebending lesion of the third thoracic. That is our specific lesion. We give it specific treatment. We find it, fix it, and let it alone—and it recurs. Why? Because the third dorsal was not *all* of the specific lesion; because we didn't really give the whole lesion specific treatment; because we didn't really fix it, and because we let it alone too soon.

The specific lesion may be a pelvis tilted backward and rotated; the lumbar compensated one way and the thoracic the other. The third thoracic is an incident.

The specific treatment is to correct the whole picture, which may take years; then it should be let alone.

Reflex Lesions.—No doubt a large percentage of vertebral lesions are primarily a result of visceral reflexes, and no doubt many spinal lesions of traumatic origin are maintained and augmented by visceral reflexes.

Every osteopathic physician has seen lesions occur in the splanchnic region from chronic alcoholic gastritis, arsenic poisoning, or just plain nervous indigestion. Irritations at a point of low sensibility show themselves at a point of high sensibility and vice versa. If they are strong enough to throw the spinal muscles into spasm, they may produce a vertebral lesion immediately. If they are not so strong, but recur frequently, vertebral lesions will ultimately result.

Probably the most persistent reflex is produced by visceral adhesions. They are also the most discouraging to treat. The proper treatment in these cases is not only to attempt to remove the primary exciting cause, but also to remove the results produced by the reflex, to prevent these spinal lesions from establishing a vicious circle.

Traumatic Lesions.—Vertebral lesions of purely traumatic or mechanical origin, not complicated by serious pathology, are relatively easy to treat. They are just a mechanical problem.

There is a difference of opinion as to the proper method of approach in repositioning and normalizing spinal segments. Some prefer to start by stretching and relaxing the muscles and ligaments and continuing this treatment until the segment is finally normalized. Personally, I prefer to break up adhesions, reposition the segment as much as possible, establish mobility as quickly as the pathology will permit, and then relax the soft tissues and put the segment through its normal range of motion.

The maximum amount of adjustment with the minimum amount of shock gives the maximum results. I am of the opinion that these results are obtained more quickly by unlocking the impingement as soon as possible. Each must use his own judgment. One may be able to do in a single treatment what it would take others many treatments to accomplish, and what still others can never accomplish.

Our greatest enemy is connective tissue. It must be broken down. One may suddenly stretch it past its elastic limit, or one may stretch it by steadily increasing pressure and holding that pressure for about five to ten seconds. It seems to take about that long to stretch it past its elastic limit so that it will not snap back like a rubber band. This must be repeated at intervals until the desired end is attained.

One should remember that all sick tissues are overstimulated or are in a state of exhaustion from overstimulation. We must not add to their distress.

If one understood his anatomy, physiology and pathology perfectly it would not be necessary to teach a *method* of treatment. That would be obvious and each one would discover his own method. However, I shall outline just one method (one should know as many methods as possible) for normalizing thoracic vertebral segments.

This method can be made specific. If properly applied it achieves the maximum amount of adjustment with the *minimum amount of shock* to the patient, and it is easy on the operator. If one expects to practice osteopathy for fifty years the last point is important.

I want to repeat that the modus operandi must depend upon the pathology of the case and the ability of the doctor. It is *always* better to do too little than too much. *Judgment* is the most important asset a physician can have. I am assuming, therefore, that the pathology of the lesion permits immediate adjustment and that it is an *extension, rotation, sidebending lesion* of any thoracic vertebra.

First, always relax the intercostal muscles on the side of the concavity. (See Fig. 1) This is important. These muscles are always shortened and although the individual muscles are small the total amount is considerable. If they are not relaxed before a vertebral adjustment is attempted, one is apt to produce a vertebrocostal lesion or the vertebral lesion will recur almost immediately on account of the rib pull.

If you are tall and have a low table, have patient sit on table, stand behind him, put foot on table with knee on level of lesion (See Fig. 2); or, put patient on stool and sit on table to get proper position of knee, or put patient on stool and you stand on floor. Any position suitable for you, your patient, and location of lesion. For the higher vertebrae I have some old books to block my foot up to get the proper height.

Fig. 1.—Demonstrating relaxation treatment to the intercostal muscles.

Fig. 2.—Demonstrating technic for correcting thoracic vertebral joint lesions.

In order to use the knee as the immobilizing point, one must use a pad of some type. After using about every type of pad imaginable, I have settled on a folded bath towel. It has many advantages over the others. The pad should be as thin and non-resilient as possible and still not hurt the patient.

In order to get one's angles and muscular pull perfect for the adjustment, it is necessary to put the spine in as nearly perfect physiological position as possible. The more the lumbar group is thrown forward the more easily the thoracic will fall into flexion. This is an important point which is usually overlooked.

(A) Assume that in this case the extension, rotation, sidebending lesion is rotated and sidebent to the right and is of the sixth thoracic. The right facet of the sixth has traveled downward on the right facet of the seventh and the articulation between them has become the point of least mobility. The segment pivots or swings from this point. The body is slightly to the right, the intervertebral disc slightly compressed on right side. The left facet of sixth is moved slightly upward. The transverse process and rib on right side approximate those of the seventh and are moved slightly backward. The transverse process and rib on left side are moved up and slightly forward.

Theoretically, an extension lesion should be corrected in flexion, but there are many practical reasons why it is better to divide the operation into two stages and do the first in extension.

Have the patient throw his lumbar vertebrae forward, thoracic extended and a little in front of perpendicular as shown in Fig. 2. Place cushioned knee exactly on left transverse process of seventh close to spinous process (keep off angle of rib) and have force directed anteriorly exactly parallel with intervertebral disc. Have patient clasp hands low on back of neck (not back of head). Reach around under patient's axillae and place hands on patient's wrists. Grip patient with forearms. Do not pull patient's head forward. Extend spine above seventh until force accumulates at level of sixth-seventh articulation, sidebend upper spine in mass to left until force accumulates on approximated facets on right side; now rotate to left until tension accumulates on same spot. (Use no force at all up to this point.) Now suddenly increase all these forces sufficiently to unlock the facets on right side and rotate the body of sixth to left on seventh. If the patient is relaxed, the angles are exactly correct and the forces synchronized; very little power is required in most cases.

"Timing" or synchronization of the adjustment is most important. The velocity should be very high, the amplitude very low. Arriving at the proper angles is science; the application of force is art. One must judge the amount of power to use by the thickening surrounding the joint, and judgment can come only from experience.

Never fight a lesion or the patient. The force is not a push with a follow-through, but a tap. I have glued a block to a table and pushed the table all over the room by pushing on the block, but have broken the block loose by giving it a sharp tap with a tack hammer. The same principle applies here.

If one does not get the desired results, one should check the angles before increasing the power. And remember, there is another day. I have worked seven years on a lesion before I established mobility, and was pleased with the results.

Let us assume that our operation was successful and we have taken the rotation, sidebending out of

the lesion. It is unlocked but still in extension. It may now be stretched into normal flexion with the patient on the side, or it may be treated as a simple extension lesion.

(B) If when this lesion was produced the rotation was greater than the sidebending, the left facet of the sixth may have been carried upward and forward on the seventh to become locked there, and the segment may be pivoting from that point instead of the side of the concavity as in *A*.

The operation for correction is similar to the previous one except that the forces are combined and synchronized in a different way. Increase the sidebending to the right slightly, to lift the left facet of the sixth off the left facet of the seventh. Hold it there and then just before sidebending and rotating to the left, make a thrust straight forward with the knee, to shoot the left facet of the seventh forward; then the sidebending to the left and rotation to the left follow. These movements are as separate as the drawings in an animated picture, but they flow into each other so that there is a perfect continuity of motion.

(C) If both facets are locked in these positions at the same time, that is, the right facet impact on the seventh and the left riding upon the seventh, the same sequence is followed as when the left is locked alone but more force is applied in sidebending and rotation than when the concavity is free.

(D) In lesion *A* the right side of the intervertebral disc is compressed and there is a torsional strain on it and the supporting ligaments. If this is sufficient to set up an irritation of the disc and ligaments, a rigidity develops and it becomes another point of immobility. Sidebending to the right may be increased but sidebending to the left is limited. This combination lesion is treated the same as *A* except that the force applied through the knee, instead of being directed straight anteriorly is directed obliquely to the right, so that it falls through the right side of the intervertebral disc.

(E) In case both facets are locked as in *A* and *B* and the body as in *D*, we correct as outlined in *B* except that we direct the force with the knee more obliquely, as in *D*.

Flexion, Sidebending, Rotation Lesions.—In this lesion the bodies of the vertebrae have rotated to the convexity instead of the concavity. In order for vertebrae to assume this position to any marked degree a deformity of the vertebrae such as that found in scoliosis is necessary.

The greatest pathology and locking is usually found on the side of the concavity, in both the facet and the disc.

Flexion, sidebending, rotation lesions should be corrected in: extension, rotation, sidebending.

Use the same general procedure as outlined above, except that the knee is placed on the transverse process on the side of the convexity of the vertebra that we wish to move, for example say the sixth. Now we extend the spine in its normal arc of motion until we begin to feel tension in the front of the vertebra we wish to move, then sidebend slightly to the convexity to take the load off the compressed concavity, and rotate the whole spine above the seventh to the concavity. Hold the spine above the seventh in this position and lift up slightly to separate the sixth and seventh. Just as this is done make a decided thrust obliquely forward and toward the concavity with the knee. This operation should separate the bodies and facets on the concavity and rotate the body of the sixth to the concavity; or in other words, move the body back under the load.

I usually attack a scoliosis from its two ends. I never use a technic that exaggerates the curve unless the facets are overriding on the side of the convexity, which is rare. The muscles and ligaments are hypertrophied on the side of the convexity. One should maintain this support and increase motion in line of correction only.

Simple Extension Lesions.—In this lesion the facets are immobilized in the position of extension. The spinous process of the sixth is abnormally close to the seventh and is apparently depressed. Using the same general method, we throw the lumbar as far forward as possible, extend the thoracic to the limit, place the cushioned knee exactly on top of the spinous process of the seventh and press firmly downward. Flex the upper six dorsal until the force accumulates on the facets of the sixth. Just at this moment increase both pressures slightly. This should easily free the facets.

Simple Flexion Lesions.—Put the spine in the same position as above. Extend the spine above the seventh until the spinous process of the sixth approaches the spinous process of the seventh as closely as possible. Put the cushioned knee on the top of the spinous process of the sixth. Press down and forward. At the same moment extend the upper spine a little farther with the hands. This should stretch the longitudinal ligament at that level and free the disc.

Simple Impaction Lesions.—This lesion is not so easy to correct. Try to mobilize it in two stages. First flexion and then extension, as outlined in the two previous treatments.

Atypical Lesions.—Of course, it is impossible to outline treatment for atypical lesions. Probably the most common atypical lesion is a lateral—a vertebra that may have been in extension, rotation, sidebending and has had the rotation thrust out of it without its going back through its normal arc. In this case and in all other atypical lesions I try to convert them into some typical form and then correct them in the usual way.

Soft Tissue Treatment.—Soft tissue treatment is just as specific a part of treating chronic lesions as the vertebral or rib adjustments. Perfect nutrition to the spinal cord is the end to be attained. This can come only from perfect mobility, and in order to achieve that we must have perfectly normalized soft tissues.

(1) If you have an air cushion in your table, place the patient face down and spring the rigid areas anteriorly with a firm, slow, heavy pressure—as much as the tissues can stand without irritation. (If you use a hard table, this treatment must be avoided, for, on a hard table, the ribs are compressed into the position of exhalation. All during life the ribs have a tendency to collapse. Never give a treatment that may increase a vicious tendency.) This establishes anteroposterior mobility. Next, with patient still face down, reach across patient and grasp the great trochanter or under anterior superior spine of in-

nominate, with lower hand, and press downward, upward and outward with heel of upper hand, with heel of hand as close to spinous processes as possible.

(2) Test rigid areas for torsion, and if restricted, place patient on side, thighs flexed just enough not to lock lumbar but still hold patient on side. Now draw under arm back so that thoracic is on quarter turn and with hands in position shown in Fig. 1 spring the rigid areas and relax between transverse processes and angles of ribs with the thumbs. Keep the arms stiff and apply force from shoulders.

(3) Place patient on side, arrange cervical and lumbar regions so that no strain is placed on thoracic vertebrae and test for segmental mobility in all directions, palpating hand on region to be examined and stabilizing hand either on hip or shoulder.

Extracapsular Fibrous Ankylosis.—The intervertebral articulations seldom develop intra-articular adhesions except in the presence of infection and serious pathology which is readily diagnosed. These cases should not be mobilized. But extracapsular fibrous ankylosis often occurs. These fibroses can and should be broken down. Stretching them is not sufficient.

The same technic suggested above for the various types of lesions is applicable except more force is required to break down a fibrous ankylosis than to adjust a lesion that is not ankylosed.

Osteochondritis.—Osteochondritis is frequently met with in all regions of the spine. It varies in degree from a slight irritation to destruction of the joint with bony ankylosis.

The question is, should any of these cases be manipulated and if so, where is the line over which we may not pass. Manipulative treatment at the present time seems to be somewhat taboo. I admit that what I am going to say is against the advice of counsel. Therefore I want it understood that the profession or any part of it is not responsible. I am not recommending that others do as I have done. I am simply emphasizing the point that the body has an amazing ability to recover if given the proper help.

For myself, I have moved the sign, "Thou shalt not pass," back a little.

Another thing: just because a patient has lived for many years is no reason, in itself, that he should not be adjusted.

I wish to report five "hopeless" cases:

(1) Female, fifty-one years old: She has always lived at high tension and is nervous but is in good condition. Twenty-five years ago, after finishing a strenuous tennis tournament, she developed a severe pain between her shoulders. This pain persisted for seven years in spite of allopathic treatment. Then she went to a very good friend of mine in Chicago for osteopathic treatment. He had her upper thoracic vertebrae x-rayed and found "osteoarthritis" at the third-fourth thoracic joint and told her that he could not manipulate it, but treated her constitutionally for the local trouble.

This third thoracic was always a "tired" spot and "burned" when she played golf or tennis.

Twenty-two years after the first pain, she developed severe general pain in her left arm, precordial pain, and a tachycardia which did not respond to allopathic treatment. She grew worse for six months and then came to me.

The spine was in good condition except the third thoracic vertebra and when I told her that could cause her trouble and that I would treat it, she said: "But you can't. This is arthritis."

The x-ray showed a definite impaction, very thin cartilage and marked thickening of the anterior longitudinal ligaments in that region. There were no bony spurs. She was very nervous about having it treated, but as the local pain subsided she got over her nervousness and I finally broke up the fibrosis.

Her symptoms cleared up in four months, but I continued treatment for a year. The intervertebral disc is still thin, it always will be; but mobility is good and she is absolutely symptom-free.

(2) Male, eighty-two years of age: This case is especially interesting because the patient was a very close personal friend of the famous Senator Foraker of Ohio who did so much for osteopathy in its beginning years. He was at one time assistant Secretary of State and has had more or less regular osteopathic treatment for thirty-five years.

He had the most rigid spine I ever saw that was not a true ankylosis. When he came to me five years ago he was extremely frail. The spinal nerve centers for heart, liver and bowel were the worst. I have established mobility in all these areas and he has made a truly remarkable improvement.

I am sure that I am no more capable than the others who treated him, but I do believe that I had more faith in my osteopathy and more faith that if those nerve centers were normalized they would function. I treated him accordingly.

(3) Female, forty-nine years old: This patient said she had suffered with backache from spinal curvature when she was young but had outgrown the curvature. Of course, she had not. As she grew older and her vitality diminished, the compensation that she had built up began breaking down and she developed a real osteoarthritis.

I was "on the spot" with this case because I had treated her before she found time to get an x-ray. I had given her immediate relief, but one day when I expressed myself as pleased, she sarcastically remarked that she did not think it could have been as bad as I had said, or it would not have improved so much. Then I insisted on an x-ray at once.

She had it taken by one of the best known roentgenologists in San Francisco. When he examined it he told her that he had never said such a thing before but he must tell her that any osteopathic physician who would treat a spine in that condition must be a fool or a criminal. He did not send me the x-rays, but gave them to her. To make a long story short she stopped treatment, but within six months her pain returned and she was honest enough to come back and bring the x-rays. They showed a very bad osteoarthritis with very bad spurs.

I realigned these vertebrae just as though there had been no spurs. Spurs may develop from strain and irritation. Readjustment relieved both and consequently it relieved the pain.

(4) Female, forty-seven years of age, was a typical neurotic. She suffered with general myasthenia for which she had been treated by many of the country's most noted physicians, but she came to me for a severe chronic right brachial neuritis.

X-Ray No. 1.—Shows the fractured ossified anterior longitudinal ligament at the level of the tenth and eleventh; it shows also that the ninth is intact. (Case history 5)

X-Ray No. 2.—Taken the following year, shows the mobility at the spaces at the tenth and eleventh increased, and that fracture has occurred at the level of the ninth. (Case history 5)

She had a very definite flexion, sidebending (to the right), rotation lesion of the sixth cervical vertebra. The lateral x-ray showed a perfect ossification of the anterior longitudinal ligament uniting the sixth and seventh cervical vertebrae. I could determine no active pathology in the bodies of the sixth and seventh or the disc between. Of course, there was absolutely no mobility.

The patient had had good allopathic treatment with no relief. There was the specific lesion, completely splinted. I could think of a thousand reasons why I should not break up the splinting, and one reason why I should. I knew I should get her written consent. I knew that if I thought it was that dangerous she wouldn't give it. So, I didn't act as though it was anything unusual but treated it just as though the splinting had not been there. It made considerable noise when it let go, but no pain. The subsequent x-ray showed a perfect fracture across the anterior longitudinal ligament.

I gave the patient only a few subsequent treatments, but she made an unusually quick recovery. That was three years ago and she has had no recurrence whatever. Incidentally, I am told that her general health has improved considerably since she was relieved of her brachial pain.

(5) Male, sixty-three years of age, had his right kidney removed in Chicago, where he lived, and had been sent to California where it was warm; but his friends were told it was not likely that he would return alive.

When he came to me I believe that he was the sickest man who ever came into my office. I haven't space to go into his symptoms but I knew if I did not do something for him that the others had not been able to do, and do it at once, he would not be able to come back.

His ninth, tenth and eleventh thoracic vertebrae were ankylosed. This was undoubtedly the original cause of his trouble. I said to myself, "It is his only chance." So I placed him on the table and broke up the ankylosis at the tenth and eleventh with the technic recommended above. Four days later he returned. He was definitely better. I treated him once a week, keeping the tenth and eleventh mobilized and giving him general treatment, for two months.

He came again the next summer for two months treatment. In the first treatment of the second year, I broke up the ankylosis at the ninth. He made better progress that summer than he had the summer before. I treated him last year and am treating him again this year just to keep him well.

The x-rays of this case are included here: X-ray No. 1 shows the fractured ossified anterior longitudinal ligament at the level of the tenth and eleventh; it shows also that the ninth is intact. X-ray No. 2, taken the following year, shows the mobility at the tenth and eleventh increased, and that mobility has been established at the ninth.

I established mobility at these points of ankylosis, and he has maintained it by lying down on the floor over a rolled-up bath towel placed under the ninth, tenth and eleventh, twice a day for the last four years.

I consider this case the most remarkable example of the ability and determination of the body to recover, when it is given a chance, that I have ever seen.

212 El Camino Real

REFERENCES

1. Beadle, Ormond A.: The Intervertebral Discs. Observations on Their Normal and Morbid Anatomy in Relation to Certain Spinal Deformities. Special Report of Privy Council. Medical Research Council. His Majesty's Stationery Office, London, 1931. (Can be purchased from Chicago Medical Book Co., Congress & Honore Sts., Chicago.)
2. Lovett, Robert W.: Lateral Curvature of the Spine and Round Shoulders. P. Blakiston's Son and Co., Philadelphia.
3. Beadle, Ormond A.: *Ibid.*, p. 9.
4. Beadle, Ormond A.: *Ibid.*, p. 10.
5. Halladay, H. V.: The New Nomenclature. Jour. Am. Osteo. Assn., 1936 (Jan.) 35:238-243.

Preliminary Report on a New Method for Gastric Research

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Since Prout showed that HCl is present in gastric contents, and Sorensen, in his work on enzymes, showed that acidity of the medium is as important a factor as temperature in enzyme action, tremendous additions have been made to the sum of our knowledge concerning these two factors in gastric digestion. The problem of determining gastric acidity alone has occupied the time and efforts of many investigators, and at the present time there are well-established routine laboratory tests which will enable the clinician to determine the range of gastric acidity by comparison with "normals." The presence of too much or too little HCl for optimum peptic activity can be ascertained in this wise.

The methods thus far employed in investigating gastric acidity invariably consist of feeding the subject a "test meal," withdrawing the stomach contents, and then testing the withdrawn specimens in test tubes. While the clinical value of this type of analysis is undisputed, it is quite obvious that very little opportunity is afforded the investigator to check the gastric acidity during the course of digestion of an average meal in the stomach. It may be possible, by the new method to be described, to determine the effects of the various food factors responsible in cases of gastric distress. The new method is also more rapid and readily adaptable for clinical analysis.

I. DEVELOPMENT OF THE ANTIMONY ELECTRODE

In an attempt to devise some means whereby the acidity of the gastric contents may be measured directly in the stomach during the digestion of an entire meal without withdrawing specimens for analysis, an antimony electrode that can be swallowed with greater ease than the Rehfuss tube was developed.* Since enzymic activity is dependent upon the pH of the medium, and not upon the total acidity or the type of acid, it follows that direct measurement of the pH of the gastric contents is of decided value. The antimony electrode was decided upon because of its widely established use with the potentiometer in making pH determinations. Finally, after many tests to eliminate the possibility of toxic effects on the subject from the antimony, a suitable electrode was obtained.

II. STANDARDIZATION OF THE GASTRIC Sb ELECTRODE

The following procedure was followed in standardizing the gastric Sb electrode: fifty male volunteers from the student body, ranging in age between eighteen and thirty years, were selected as subjects after they had been examined for gastric symptoms and had been pronounced fit. A modified fractional gastric analysis was performed on each subject by having him swallow a Rehfuss tube. The stomach residuum and specimens of "appetite juice" were withdrawn at fifteen minute intervals until a total of five specimens including the residuum were obtained. The Ewald test meal was used as the stimulus for obtaining "appetite juice." Each specimen was tested for total acidity with N/10 NaOH using phenolphthalein as the indicator; in addition, the pH of each specimen was taken using the quinhydrone, commercial antimony (Sb), and gastric antimony electrodes. Hydrogen-ion concentration measurements with the gastric antimony electrode were taken under conditions as nearly as possible like those that would be found in the stomach. The purpose of this procedure was twofold: first, to check the gastric antimony electrode against two standard electrodes; and second, to attempt to establish any relationship between pH and total available hydrogen. Table I contains the averages obtained from all the data of these tests.

TABLE I
GASTRIC ACIDITY OF FIFTY SUBJECTS (AVERAGE)—SAMPLES WITHDRAWN

	Time	cc. N NaOH/10	pH Commercial Sb	pH Quinhydrone	pH Gastric Sb
Residuum	0	29.6	3.22	3.12	3.22
Specimen I	½ hour	40.8	2.56	2.57	2.60
Specimen II	¾ hour	57.1	2.27	2.14	2.25
Specimen III	1 hour	70.2	1.91	1.88	1.90
Specimen IV	1¼ hours	68.7	1.92	1.90	1.92

Since Table I contains the averages of these tests, it does not show the range of variation of the individual tests. From the separate results it was observed that: first, while the total acidity of the residuum varied widely in different individuals, the total acidity of the "appetite juice" varied within much narrower limits; second, while there were many specimens that contained the same total acidity, the pH of these specimens varied considerably. This latter condition no doubt was due to the different buffering power of the various specimens.

Conclusions: 1. The data from these tests showed a close correlation in the results obtained when employing these three types of electrodes, and *established the reliability of the gastric antimony electrode in taking pH measurements.* 2. *There is very little correlation between total acidity and pH.*

III. DIRECT DETERMINATION OF GASTRIC pH

Before attempting to make direct measurements of the gastric pH, three controls were selected from the fifty subjects previously tested, and these three were used for all subsequent tests. A series of twenty tests identical in procedure with those recorded in Section II of this paper was run on each of these controls. Since the results of these as well as subsequent tests on the three subjects were very similar, only the data from Subject A are recorded in Table II. These are averages for the twenty tests, and it will be noted that they follow closely the results recorded in Table I.

TABLE II
GASTRIC ACIDITY—TWENTY TESTS ON SUBJECT A (AVERAGE)—SAMPLES WITHDRAWN

	Time	cc. N NaOH/10	pH Commercial Sb	pH Quinhydrone	pH Gastric Sb
Residuum	0	28.8	3.21	3.11	3.22
Specimen I	½ hour	40.96	2.59	2.57	2.59
Specimen II	¾ hour	56.4	2.28	2.11	2.29
Specimen III	1 hour	69.1	1.99	1.89	1.91
Specimen IV	1¼ hours	69.8	1.92	1.80	1.85

*The development and perfection of the actual antimony electrode used for these experiments was accomplished by Henry George, III, D.O., whose arduous work and painstaking study of the problem cannot be too highly commended.

For the first experiments on measuring the pH of the gastric contents *with the electrode in the stomach,* the following procedure was employed: the three subjects swallowed the electrode and the pH of the residuum was taken. With the electrode still in the stomach, they were given an Ewald meal. Allowing one-half hour for ingestion of the meal, pH readings were taken at fifteen minute intervals thereafter for a total time duration of one hour and fifteen minutes. Table III contains again the averages of results obtained from twenty tests on Subject A.

TABLE III
GASTRIC ACIDITY—TWENTY TESTS ON SUBJECT A (AVERAGE)—SAMPLES NOT WITHDRAWN

	Time	pH Gastric Sb
Residuum	0	3.04
Specimen I	½ hour	4.10
Specimen II	¾ hour	3.36
Specimen III	1 hour	3.04
Specimen IV	1¼ hours	2.98
Specimen V	1½ hours	2.98

While there was considerable variation in the pH of the residuum from day to day, there was no great variation in the pH of the "appetite juice" at the various time intervals indicated in Table III.

IV. INFLUENCE OF VARIOUS FOOD FACTORS ON GASTRIC pH

Subsequent tests on the direct determination of gastric pH were carried out using commonly prepared food factors (such as are encountered in average meals) as the stimuli for "appetite juice." Such foods as steak, potatoes, fat, etc., eaten singly were tested with the antimony electrode in the stomach. At the present time, data from these tests are incomplete. A few observations, however, are included to show the general trend of the results now being obtained. Over thirty different food substances have already been used, and most of these have been studied in single tests. Consequently, no conclusions can yet be drawn concerning the effect of these factors on gastric pH. In general, *the pH as recorded has never reached the optimum for peptic activity* in vitro (pH 1.3-1.8). Also, the variations in pH produced by different food factors have not been as great as might be expected. More complete data, however, may reveal information not apparent in the results from these preliminary tests.

IV. SUMMARY

1. An antimony electrode apparently suitable for making direct pH determinations in the stomach during the course of digestion of average meals has been obtained and standardized.

2. Preliminary work with this electrode indicates: (*a*) that the optimum pH for peptic activity in vitro is not attained in the stomach during the actual course of digestion; (*b*) that different food factors do not produce a great variation in gastric pH during the course of digestion.

3. If subsequent work with this electrode in gastric research proves successful, it can be used in similar manner for duodenal research.

4. The use of the antimony electrode method should prove to be a more rapid method in clinical analysis than any other.

ACKNOWLEDGMENTS

Acknowledgment is made of the splendid assistance given by the various members of the Department of Chemistry at the Philadelphia College of Osteopathy. Especial mention is made of the services of Dr. Henry George, III, and Dr. Florenz Smith. The College authorities have been most cooperative in permitting departure from regular routine hours in order that these studies could be made. The purchase of a potentiometer by the College made it possible to obtain the various pH readings.

48th and Spruce Sts.

Autopsy in Case of Amebic Dysentery

OLIVE I. BONDIES, D.O., and LOUISA BURNS, D.O.
South Pasadena, Calif.

Amebic dysentery and amebiasis have become rather common diseases in certain parts of the United States during the past twenty years or so. Some special studies have been made at Bondies Sanitarium, in South Pasadena, of these diseases and of the results of various methods of treatment.

The pathology of amebic ulcers in the intestine has been studied in several biological and medical laboratories. Amebic ulcers differ from those produced by other pathogenic organisms in several respects which have clinical importance. Amebic (or entamebae) become encysted when subjected to injurious conditions, and in the encysted state they may live for a considerable time. They are, in this state, taken into the body with food, the capsule of the cyst is digested in the small intestine, the daughter amebae grow and pass into the colon. They increase in size and numbers, invade the glands of the mucosa and form colonies of varying size in the submucosa. They do not initiate inflammatory reactions of significance, no pus is produced, no leucocytosis occurs; they do not exert any marked pathogenetic influence upon the superficial tissues. They do form proteolytic ferments, and these set up a colliquative necrosis in neighboring tissues. This necrotic fluid provides them with food, destroys the circulation in the surrounding tissues and so produces an ulcerated area in the submucosa which remains for a considerable time, covered over with normal, or approximately normal mucosa. For this reason, the x-ray studies of an intestine so ulcerated may show little or no pathological indications. In studying x-ray plates of such intestines, any evidence of ulceration, however apparently insignificant, must be considered really most serious. Very often severe cases of amebiasis show no evidences of ulceration of the intestine at all, in the x-ray plates. Only when the subjacent ulceration has extended into the intestinal canal may they be recognized in x-ray plates. The areas of mucosa between the amebic ulcers remain almost or quite normal; neither hyperemia nor any purulent fluids are formed unless complicating factors are present.

The microscopic findings are in harmony with the development of the ulcer. Amebae are abundant in the glands and in the submucosa and the adjacent tissues. No zone of reaction appears in typical ulcers. Large endothelial cells may be found and often moderate numbers of eosinophiles

may be present in the floor of the ulcer; these cells do not seem to effect any limitation of the ulcer nor to exert any impediment to amebic invasion. They are themselves usually digested by the proteolytic ferments produced by the amebae.

Secondary infection occurs in most cases after the ulcer becomes open to the intestinal contents. Inflammatory reactions then occur, a purulent pseudomembrane may form, leucocytosis may be recognized in the blood count, as in bacillary or other forms of colitis.

The records of the clinical laboratory of The A. T. Still Research Institute include an account of an autopsy performed upon a man who suffered an unusually resistant amebic dysentery. This case occurred in 1920-1922, and some of the records of his treatment were not preserved. In this case the structure of the intestine explains why the amebae resisted treatment. The condition suggests an explanation of the lack of efficacy shown by therapeutic methods in other cases.

Case No. 84, male, aged 77 years, suffered an attack of dysentery, followed by similar attacks with remissions but no intermissions for about a year. Previously he had enjoyed ordinary good health all his lifetime. The attacks of diarrhea resisted all ordinary methods of treatment. The stools became bloody and predominantly mucous. No record of severity or frequency were preserved.

During the fifteen months following the first attack, several allopathic physicians were consulted. Ordinary medication for diarrhea was administered, but no careful study was made of the condition, no examinations of the stools, and, so far as the patient or his family were aware, no diagnosis was made. A diet containing much roughage was advised, but this increased the severity of the symptoms.

About fifteen months after the first attack, the patient consulted an osteopathic physician, who referred him to Bondies Sanitarium for treatment. On the first examination of the stool, *entamebae histolytica* were found in great numbers. Upper lumbar rigidity was the only physical finding, except the evidences of severe colitis. On making a blood count, leucocytosis (27,000 per cu.mm.) was discovered. Urinalysis gave practically normal findings. Notes were made of these conditions, but the original reports were not kept.

Many cases of amebiasis had recovered at the Sanitarium after repeated colonic irrigations, osteopathic manipulative treatment and suitable diet. The diet advised at that time was bland, nonirritating and nutritive. In this case, the treatment gave some temporary relief, but no permanent or noteworthy change in the colitis. More drastic methods seemed to be indicated for the destruction of the amebae. The usual treatment, at that time, consisted of different preparations of arsenic, emetine, and ipecac given by mouth or intravenously. These were employed but the amebae were not perceptibly affected.

Death occurred about eighteen months after the first attack. Autopsy was performed about eight hours after death, and before the body had been embalmed.

Autopsy Report.—"Case No. 84. Body is that of thin, elderly man. No superficial wounds or abrasions. No evidences of disease of the skin. Small fibroid tumor on skin of abdomen, apparently of no significance.

"Lungs. Pneumoconiosis moderate. Old, healed, calcified lesions, probably tuberculous, abundant in upper lobes. Pleuritic adhesions, abundant, delicate, friable over posterior surfaces both lungs, most abundant over upper lobes.

"Heart. Larger than normal for man of his size. Parietal pericardium densely adherent to adjacent tissues in all areas. Heart muscle not abnormal on gross examination. Left ventricle moderately hypertrophic. Many sclerotic areas of moderate size and density on mitral, tricuspid, and both semilunar valves and chordae tendineae. Tests with water show no inefficiency in cardiac valves.

"Aorta. Distal area of aortic arch shows many irregular sclerotic rings and plaques. Lumen moderately diminished in this part of aortic arch. Aorta dilated moderately between calcified area and left semilunar valve.

"Stomach, gall-bladder and liver show no abnormal conditions.

"Spleen normal in size and position. Parietal and adjacent surfaces show fibrous plaques resembling old scar tissue; fibrous areas do not invade splenic tissue.

"Intestines distended with gas. No food remnants present.

"No peritoneal adhesions. Mucosa covered with inflammatory pseudomembrane, hemorrhagic and purulent. Both colon and small intestine showed diverticula extending into the mesentery, many hundreds in number, often arranged in groups, varying from single, blunt sacs less than one-fourth inch in length to branching complicated cavities two inches or so in length. Inflammatory pseudomembrane extends into these diverticula. Scrapings taken from several of the cavities contained abundant amebae. Diverticula evidently of developmental origin.

"Mucosa soft, stripped away from muscular coat with ease. Muscular coat not perforated. No evidence of peritonitis.

"Kidneys. Lobulated structure marked. Both kidneys moderately congested. Pelves contain masses of fat. Other abdominal and pelvic viscera show no abnormal condition."

Cause of death: Amebic dysentery.

Note. Diverticula of similar type are not rarely found at autopsy, though they are not often found in such great numbers. Similar diverticula have been described in animals with other evidences of developmental defects, at Sunny Slope. The lobulation of the kidneys in this case is of interest, being associated with the intestinal anomaly. The diverticula, no doubt, offered harbor to the amebae and protected them from the colonic irrigation which might have removed many of them from the cavity of the colon.

810 Prospect Ave.

Dallas—A.O.A. Convention City for 1939

BUREAU OF CONVENTION PROGRAM

COLLIN BROOKE, D.O.
Chairman
St. Louis, Mo.

"TRUTH—WHAT IS THE TRUTH?"

The slogan in the caption above, announced for the current year by President Arthur E. Allen in his acceptance address at Cincinnati, is the basis for the general program of the Dallas convention. We shall attempt to adhere to this principle.

Your officers, the personnel of Central office, and all those who are giving their time and efforts to prepare a program which is truly osteopathic, are hard at work on convention plans. The tremendous amount of correspondence and planning incidental to the national convention is well under way.

The Chairman of the Bureau of Convention Program has sent out more than three hundred inquiries to ascertain the wishes of members of the American Osteopathic Association as to speakers and subjects. Answers have been received from almost all physicians to whom inquiries were sent and the information given shows thought and interest in the building of the program. The great majority of letters request that more time be devoted to the presentation of osteopathic technic and theory on our programs than formerly. All answers have been tabulated and are receiving careful consideration. Invitations to speakers are being prepared. The Dallas convention will be as truly osteopathic as possible and all speakers invited to appear on general or section programs are urged to keep in mind and stress in their addresses, the osteopathic concept. Such subjects as public health, vocational guidance, public and professional welfare, and legislation must also receive serious consideration.

Lloyd M. Long

Downtown Dallas, looking toward the East. The triple underpass in the immediate foreground is the approximate site of the first house in Dallas, a one-room log cabin built in 1841. The underpass is at the Union Terminal yards, and gives access to one of the principal trafficways across the Trinity River.

It is imperative that all section chairmen begin *now* to invite speakers for their programs. They are urged to keep Central office and the Chairman of the Bureau of Convention Program advised as to the progress of their programs by sending copies of all correspondence and a detailed report of progress on the first day of each month.

C. B.

National Board of Examiners for Osteopathic Physicians and Surgeons

W. CURTIS BRIGHAM, D.O.
President
Los Angeles

EXAMINATIONS SCHEDULED IN PARTS I AND II

The National Board of Examiners for Osteopathic Physicians and Surgeons will hold examinations in Parts I and II at each of the approved osteopathic colleges on Thursday and Friday, December 1 and 2.

Part I of the examination includes the subjects of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; bacteriology, including parasitology and immunology.

Part II of the examinations includes the subjects of surgery, including applied anatomy, surgical pathology and surgical specialties; obstetrics and gynecology; pediatrics; neuropsychiatry and therapeutics; public health, including hygiene and medical jurisprudence; osteopathic theory (principles) and practice.

Parts I and II are written examinations. Part III of the examinations is oral and is held usually at the time of the national A.O.A. convention.

The fees for the examinations to accompany the applications are as follows: Part I, $10.00; Parts II and III, $20.00 each, a total of $50.00 for the entire examination.

Application blanks may be secured from the Deans of any of the osteopathic colleges and from the undersigned.

ASA WILLARD, D.O., Secretary-Treasurer.
Missoula, Mont.

Public Health Radio Programs

Educational health programs approved by the Committee on Public and Professional Welfare of the A.O.A. are being broadcast over the following stations:

WAAF—920 kilocycles, Chicago, Wednesdays, 1:35 p.m., Chicago Osteopathic Society.

KFKA—880 kilocycles, Greeley, Colo., Wednesdays, 4:45 p.m., Colorado Osteopathic Association.

KIUL—1210 kilocycles, Garden City, Kans., Wednesdays, 11:15 a.m., Kansas Osteopathic Association.

KHBG—1210 kilocycles, Okmulgee, Okla., Sundays, 3:15 p.m., Eastern & Central Oklahoma Osteopathic Association.

WMAZ—1180 kilocycles, Macon, Ga., Thursdays, 10:45 a.m., Georgia Osteopathic Association.

WPAR—1420 kilocycles, Parkersburg, W. Va., and WBLK, 1370 kilocycles, Clarksburg, W. Va., Marietta Osteopathic Clinic.

WROK—1410 kilocycles, Rockford, Ill., second Friday of each month, 8:30 p.m., Winnebago County Osteopathic Association.

WFBL—1360 kilocycles, Syracuse, N. Y., third Saturday of each month, 2:00 p.m., Central New York Osteopathic Society.

WHAZ—1300 kilocycles, Troy, N. Y., Mondays, 7:00 p.m., Hudson River North Osteopathic Society, New York.

KFJB—1200 kilocycles, Marshalltown, Iowa, Wednesdays, 7:30 pm., Iowa Association of Osteopathic Physicians and Surgeons.

WTCN—1250 kilocycles, Minneapolis, Minn., every other Wednesday, 10:00 a.m., Minnesota Osteopathic Association.

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MANIPULATIVE SURGERY

Will allopathic colleges establish chairs of osteopathy on their faculties? How soon will this be done? These questions have been discussed more and more frequently in recent years, in osteopathic circles. To some extent the answers may depend upon our definition of osteopathy. It is well known that manipulative measures are being used with rapidly increasing frequency by orthopedic surgeons and others in the allopathic profession, and that they are being described and illustrated in more and more allopathic periodicals and books.

Some of the most recent and convincing evidence of the extent to which these things are being taught to allopathic students came to light at the seventeenth annual convention of the American Congress of Physical Therapy held the past month in Chicago. G. Mosser Taylor, M. D., Associate Professor of Orthopedic Surgery in the College of Medical Evangelists, Los Angeles, read a paper before the general sessions entitled, "Manipulative Surgery: A Challenge to the Medical Profession." Conversation with Dr. Taylor, study of his display in the scientific exhibit, and watching his work lead to the belief that this paper will make interesting reading when it appears in the *Archives of Physical Therapy*. In his booth Dr. Taylor presented colored motion pictures of himself giving manipulative treatment to a patient on a treatment table and there were displayed on the walls of the booth twenty-five to thirty pen sketches of manipulative procedures employed for the relief of joint disorders in various regions of the body. There were included in this exhibit illustrations of technic for the sacroiliac joint (the leg pull was one method demonstrated for correcting sacroiliac lesion), cervical and lumbar spinal joints, the knee joint, the shoulder joint (football shoulder), the elbow joint (tennis elbow), and the joints of the feet. In his lecture during the showing of the motion pictures, Dr. Taylor explained to the group watching that the particular piece of technic he used on feet was known as the "Locke method of correcting the cuboid." This procedure was known and used by osteopathic physicians many years before the Canadian physician came into prominence. In fact, all of the methods demonstrated in the pictures were those imitative of well-known osteopathic procedures and in use for many years, but in our opinion the technic exhibited by this orthopedic doctor lacked the finesse characteristic of careful osteopathic work. In all of the pictures there was an ether mask over the patient's face, indicating that such manipulative measures were given under anesthesia.

During the course of his lecture Dr. Taylor spoke to the effect that if "regular" orthopedic men would add this manipulative work to their armamentarium, they would be able to hold many of their patients who might otherwise leave them for the irregular practitioners because there was no question but that these unorthodox healers were getting results.

The trend toward osteopathy becomes increasingly stronger. A few years ago the all-powerful Council on Physical Therapy of the American Medical Association would have scorned anyone who merely suggested the possibility of erecting an exhibit such as that displayed by Dr. Taylor on manipulative surgery. It was amusing, if not actually significant, that the location of Dr. Taylor's exhibit was exactly opposite that of the Council on Physical Therapy and occupied an equal amount of space.

After witnessing the best that our competitors have to offer *at present* in the way of manipulative treatment, we feel that they are a long way from even approaching the true fundamentals of osteopathic therapy. Nevertheless, we cannot lull ourselves to sleep by thinking that we are secure in our high position. Science does not stand still. There are some able thinkers in the enemy's camp and they have unlimited resources for research. A few of them are ferreting out truths about the mechanics of the body which we should know about. We must keep ahead in developing our own science if we are to keep alive. Manipulative surgery is the back door to osteopathy, and it's wide open.

R. E. D.

OSTEOPATHY AND THE CENSUS

Dr. G. W. Woodbury, in his article in THE JOURNAL for July, calls attention to the fact that too many osteopathic physicians are not properly identified by name plate, stationery, etc. Some of them deliberately make themselves known only as physicians, with no indication of the kind they are. He might have added that when the enemy undertakes to show how few we are, he need only turn to the figures compiled by the United States Census Bureau to prove conclusively what is not true—that our numbers are many thousands less than they really are. It is only about two years until the census taker comes again. Can we not in the meantime make up our minds to identify ourselves properly, instead of simply saying that we are "physicians," or "physicians and surgeons."

WHAT IT COSTS—WHAT IT BUYS

Why do we support osteopathic organizations? There are many reasons, among them these two:

Our innate loyalty and desire to serve;

The benefits we will derive from membership.

These motives are probably intermingled in varying proportions in every one of us. The proportions may change with our growth and development. Some feel themselves vitally a part of an organization as soon as they pay their dues. Some always feel like outsiders who are paying tribute. It has often been said that "rendering any service to an organization, no matter how small, makes one feel a part of that organization." This accounts for the fact that some feel a greater sense of kinship as the years pass and the service piles up.

Service is a reciprocal thing. It would be worse than futile for individuals to serve the Association if it, in return, did not serve science and the public and the profession and the individual. The Association has served valiantly. It must continue to give service—and more service.

Here again there are varieties of motives. An organization should serve because that is the fundamental reason for its being. But it can give its highest and best service to the community only as it gives sufficient tangible, individual, service to its members to enable it to attract and hold great numbers of osteopathic physicians who look to the benefits to be derived before they see their obligation to serve. The Association can give these varieties of expanding service only as its budget will permit.

Times have changed and are changing. Our civilization is growing more complex. Our economic setup demands constant activity on the part of national, state, and local organizations. Our profession is demanding many types of service from its societies, which were undreamed of a few years ago.

The time has passed (probably forever) when the only, or even the chief, function of an organization such as ours is to maintain a considerable membership, to conduct conventions, and to run publications. It is absolutely necessary to take and maintain our place in the world of social medicine which is already here to the extent of work in the fields of insurance, athletics, schools, care of the indigent, etc. It is necessary to the welfare of the individual osteopathic physician—every individual osteopathic physician—that these things be done. And it requires work, and costs money.

The reaction of the members as they pay their dues is an interesting one as we keep these thoughts in mind. Three men who have recently paid their twenty dollars each, commented as follows:

"It will be hard for many doctors." "It is hard for me." "The dues are too high, considering what the A.O.A. means to me."

Is it possible that some of us are looking through the wrong end of the telescope? Do we think first of what it means to contribute $20, rather than what our profession can do with that sum? Everybody knows that there are individuals to whom the payment of $20 is a burden, but the doing of hard things and paying the price, is a part of pioneering. The pathfinders of history never counted the cost, but have kept their eyes rather on what was to be achieved.

Those who look at the membership fee as being too much for an individual to pay, forget that the aggregate of these sums is too little for the profession to accomplish the things that must be done. For that reason, many members of the Association are paying their dues and going right on from there, voluntarily contributing $100, $75, $50, or $25, not just for one year but over a period of years. In addition, most of these are giving hours and days of service. They exemplify the saying that in rendering service to an organization, one is made to feel a part of that organization.

It is noteworthy that most of those who express the fear that the price is too high for others, are themselves paying. Doubtless they will be heartened by the pioneering spirit shown by some who are in hard circumstances, but who glory in doing their part. The following quotations are condensed from different letters:

"I will not be able to pay this when due. Business is so dull I cannot keep up my running expenses. There may be a 'recession' in Chicago, but it is *panic* here." Later the same man paid and said: "I consider it money well spent."

A doctor in another continent, where tangible membership benefits are less than in this country, who graduated only two years ago, remitted $20 and said: "I admire what the Association has been able to accomplish during the past year. I am proud to be allowed to belong. . . . My only regret is that I am unable financially to pay more than my dues."

One in still another continent where tangible benefits of membership are less than in America, wrote about being prosecuted, but acquitted through influential friends. He said: "I am sending a draft for my dues and also for my brother's. Also $10 for any one of the good causes that you think needs it most."

Other quotations:

"On account of illness I have not been able to attend an A.O.A. convention for four years, but hope to next year. Thank you for asking for my check."

"I am just now about after four weeks in the hospital with day and night nurses and four weeks at home with private nurse. Because of this heavy expense and the fact that my professional income ceased long ago, I wavered a little about continuing membership. But the thought of what the profession has done for me and the memory of an extensive and fruitful practice in years past convinced me that next to my church I owed greatest fealty to the A.O.A."

"Thank you for many acts of courtesy and kindness. If you made these dues $100 a year, you would not run me out."

"Membership is imperative. I commend the organization for the splendid work done in the past. I know that in the future osteopathy is going to leap

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